

Undergraduate Catalogue 2017

**Faculty of**

**PHARMACY**

## Faculty Administration

<b>Dean</b>	Prof. Abdalla El-Lakany
<b>Assistant Dean</b>	Dr. Lama Soubra
<b>Executive Administrator</b>	Pharmacist Hanadi Jazi

## Academic Staff

<b>Professors</b>	Dr. Abdalla El Lakany, Dr. Maha Aboul Ela, Dr. Hoda El Maradny Dr. Azza Ghazi, Dr. Hania Nakkash.
<b>Associate Professors</b>	Dr. Khaled Abdel Galil, Dr. Doaa Issa, Dr. Karim Raafat
<b>Assistant Professors</b>	Dr. Lama Soubra, Dr. Mohammad Issa, Dr. Mohammad Mehanna Dr. Suzanne Nasser, Dr. May Saab
<b>Lecturers</b>	Dr. Suraya Domiati, Dr. Deema Rahmeh, Pharmacist Mohammad Ali Hijazi Pharmacist Marwa Al Jamal, Pharmacist Safaa Hammoud, Dr. Rania Itani Dr. Youssef Fattouh.
<b>Part-time Lecturers</b>	Dr. Olfat Osta, Dr. Katia Iskandar, Dr. Rabih Hassouneh, Dr. Soha Sinno Dr. Colette Raidi, Dr. Nizar Saab, Dr. Maysaloun Kanso Dr. Ahmad El-Yazbi

## History

The Faculty of Pharmacy at Beirut Arab University was established in 1986 in Beirut, the capital of Lebanon. The undergraduate program at the Faculty of Pharmacy started with six academic departments & progressed to include four academic departments, as follows:

1. Pharmaceutical Sciences
2. Pharmacology & Therapeutics
3. Pharmacy Practice
4. Pharmaceutical Technology

The Faculty of Pharmacy has observed considerable growth in the number of its students that increased from 115 in 1991 to 475 in the academic year 2014-2015. The main objective of the Faculty is to prepare competent pharmacists for career opportunities in different Pharmacy domains & to promote their role as healthcare providers, in framework of code of ethics.

Since its establishment, the faculty adopted the extended academic year system, & in 1999 it moved to the two academic terms scheme. In 2002, the faculty updated the academic programs & adopted the rules & regulations of the "Credit Hour System". In 2002, the Faculty expanded its curriculum to incorporate postgraduate programs including: Master & PhD Degrees, in addition to Two-year duration Pharm.D. program.

The implementation of the "Experiential Training" Program for Pharmacy students was achieved in the academic year 2009-2010, & it became an integral part of the curriculum aiming to allow students acquire the required skills & competencies, under effective supervision from faculty. In the same academic year 2009-2010 & in response to a societal need, a one-year duration Pharm.D. program was established. Accordingly & at the same time, pharmacotherapeutics I-VI were added,

gradually, to enable Faculty graduates to enroll in the Pharm. D. program without conditions. In the year 2011-2012, pharmacotherapeutics I-VI became core courses, & two Faculty elective courses, "Pharmaceutical Marketing & Management" & "Communication Skills For Health Professionals", were added to the curriculum.

Moreover, the Faculty established a "Pharmaceutical Continuing Education Program" which includes short courses, seminars & presentations in the various Pharmaceutical fields that offer graduates & the community a venue for maintaining up-to-date knowledge.

In May 2012, the Canadian Council for Accreditation of Pharmacy Programs (CCAPP) conducted a pre-accreditation site visit to the Faculty of Pharmacy for evaluation of the undergraduate educational Program at BAU. In the same year & based on the CCAPP final report, the Faculty of pharmacy started to design a new curriculum to adjust the pharmaceutical sciences & introduce more clinical courses. The Faculty also established a pharmacy practice department PPD to offer courses specifically designed to achieve the Canadian professional competencies for pharmacists at entry-to-practice. The courses offered at early levels like Professional Communication Skills, Pharmacy Practice Management, Pharmacy Practice I & Pharmaceutical calculations serve as a solid foundation for the subsequent courses offered at higher levels.

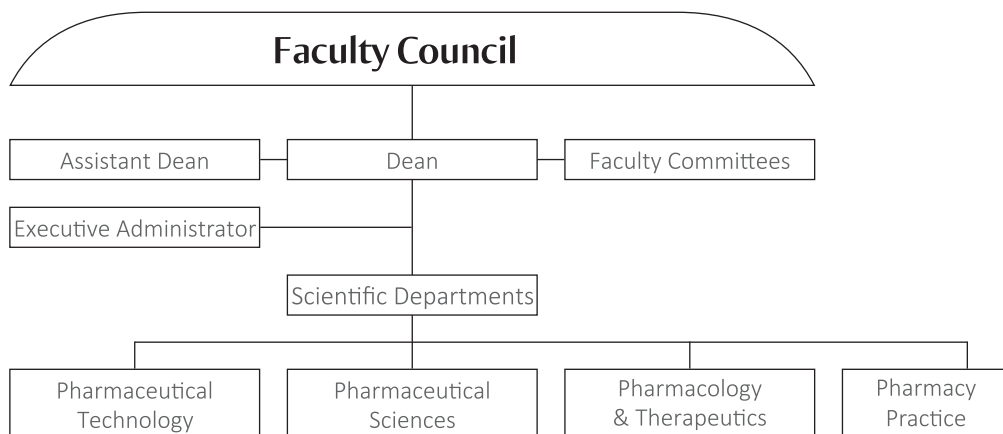
The Pharmacy practice courses are interspersed in the Faculty curriculum in concordance with other relevant courses including Biochemistry, Pharmacology, Therapeutics & Pharmaceutics, to achieve optimal learning outcomes. Moreover, a series of Integrated Case-Based Learning ICBL courses in addition to an Inter-Professional Education IPE course were included to promote pharmaceutical care practice as well as inter-professional collaborative patient-centered practice.

In October 2014, CCAPP has conducted its second site visit to the Faculty of Pharmacy for the accreditation of the Pharmacy Program. In the same academic year & based on the site-visit report, the Faculty of Pharmacy started to improve the curricular contents & design & further increase the percentage of clinical part of the curriculum. A great effort was made to vertically & horizontally integrate the courses to facilitate the curricular delivery. Moreover, OSCE was applied for the first time for the Fifth level students as a tool to measure the expected acquired competencies.

## Organizational Structure

The Faculty of Pharmacy constitutes the following Departments: Pharmaceutical Technology, Pharmaceutical Sciences, Pharmacology & Therapeutics, & Pharmacy Practice.

The organizational chart of the Faculty is as follows:



## Vision

The Faculty of Pharmacy, at BAU, envisions itself as a premier academic institution in pharmacy education, research & community involvement.

## Mission

Faculty of Pharmacy, at BAU, is an academic institution founded in 1986 to provide high quality pharmacy education & scientific research. The faculty educational program was designed & developed to prepare competent pharmacists able to effectively participate in the advancement of pharmacy profession, nationally & internationally. The Faculty supports the role of its graduates as health care providers in the frame of professional ethics. The faculty seeks to establish a well-built relation with peer institutions & the surrounding society. To accomplish its mission, the faculty relies on qualified staff members, laboratory facilities & educational tools.

## Objectives

- Preparing pharmacists who are able to apply their unique knowledge & skills during their professional practice, & are committed to the code of ethics, & dedicated to life-long learning.
- Continuous development of the curriculum to keep up with the global changes & to cope with the growing professional & community needs.
- Enhancing the intended outcomes & competencies necessary to attain the international standards of the pharmacy profession.
- Advancement of professional training programs for pharmacy students & graduates to maintain high quality pharmaceutical care.

- Enhancement of the scientific research at the Faculty & supporting the collaboration with local & international peer institutions.
- Providing the community with research experts capable of effective participation in the advancement & preservation of the environment.
- Supporting the collaboration with regulatory authorities, pharmaceutical & health care settings, & other community sectors.

## Academic Program

The Faculty offers a Bachelor Degree in Pharmacy, where the standard duration of study is ten semesters.

## Admission Requirements

To be accepted for an undergraduate degree, applicants must:

- Hold the official Lebanese Secondary School Certificate in a branch relevant to the chosen undergraduate field of specialization, or an official equivalent;
- Successfully pass an Entrance Exam to measure the level of Proficiency in English Language, an aptitude test (thinking skills, scientific knowledge: Biology, Physics & Chemistry), as well as attend a Personal Interview.

## Learning Outcomes

The pharmacy program provides opportunities for students to develop & demonstrate fundamental knowledge & understanding skills, supported by other professional & practical skills appropriate for attaining a Bachelor Degree in Pharmacy.

After completing the academic program all graduates will be able to:

- Practice Pharmaceutical Care
- Assume ethical, legal, & professional responsibilities
- Access, retrieve, evaluate & disseminate relevant information
- Communicate & educate effectively
- Manage drug distribution
- Apply practice management knowledge & skills
- Demonstrate the ability to work in a pharmaceutical plant
- Practice rational distribution & manufacturing of drugs from natural sources

## Career opportunities

Community pharmacists, Hospital pharmacists, Health care centers, Pharmaceutical industry, Pharmaceutical promotion, Academia, Regulatory affairs, Clinical Pharmacy settings, Pharmaceutical public sector, International organizations, Military/governmental hospitals.

## Graduation Requirements

To receive a Bachelor Degree in the Pharmacy program, a student must satisfactorily complete 180 credit hours with an overall minimum grade point average (GPA) of 2.0 + ICDL (International Computer Driving License). The Student's Study Plan is given to every Pharmacy student upon his/her enrollment. The following table summarizes the number of credits required for each bachelor-granting program at the Faculty:

Program	University Requirements (12 Credits)		Faculty Requirements (168 Credits)		Total Credit Hours
	Mandatory Courses	Elective Courses	Faculty Mandatory Courses (162Cr.)	Faculty Elective Courses	
PHAR	5	7	<ul style="list-style-type: none"> <li>- Biomedical Sciences Courses: 24Cr.</li> <li>- Pharmaceutical Sciences Courses: 69Cr.</li> <li>- Pharmacy Practice Courses: 41Cr.</li> <li>- Pharmacy Practice Experience: 28Cr.</li> </ul>	6	180
PHAR:Pharmacy					

\*A total of 12 credits is required as General University Requirements; 5 credits are selected from the University Mandatory courses list including: ARAB 001 (2Cr.), ENGL 001 (2Cr.), BLAW 001 (1Cr.) & another 7 credits are selected from the University Elective courses list + ICDL.

## Faculty Mandatory Courses

Course		Title	Credits	Prerequisite
PHAR	250	Pharmaceutical Physical Chemistry	2	
PHAR	251	Natural Medicine & Nutritional Supplements	3	
PHAR	252	Pharmaceutical Organic Chemistry I	3	
PHAR	253	Human Biology	2	
PHAR	254	Anatomy & Histology	3	
PHAR	255	Communication Skills in Pharmacy Practice	2	
PHAR	260	Pharmaceutical Analytical Chemistry I	3	Pre: PHAR 250
PHAR	261	Natural Therapies I	3	Pre: PHAR 251
PHAR	262	Pharmaceutical Organic Chemistry II	3	Pre: PHAR 252
PHAR	263	Physiology I	2	Pre: PHAR 254
PHAR	264	Orientation to Pharmacy Practice	2	
PHAR	265	Pharmacy Practice Management	1	
PHAR	266	Pharmacy Practice Experience I	4	Pre: PHAR 264, PHAR 265

## Faculty of PHARMACY

PHAR	270	Pharmaceutical Analytical Chemistry II	3	Pre: PHAR 260
PHAR	271	Pharmaceutical Dosage Forms I	2	Pre: PHAR 264
PHAR	272	Natural Therapies II	3	Pre: PHAR 261
PHAR	273	Pharmaceutical Organic Chemistry III	3	Pre: PHAR 262
PHAR	274	Physiology II	2	Pre: PHAR 263
PHAR	275	Pharmacy Practice I	2	Pre: PHAR 264
PHAR	280	Pharmaceutical Analytical chemistry III	2	Pre: PHAR 270
PHAR	281	Physical Pharmacy & Product Stability	3	Pre: PHAR 271
PHAR	282	Modern Separation & Isolation Techniques	2	Pre: PHAR 272
PHAR	283	Pharmaceutical Microbiology I	3	Pre: PHAR 253
PHAR	284	Biochemistry	3	Pre: PHAR 273, PHAR 274
PHAR	285	Pharmacy Practice II	2	Pre: PHAR 264
PHAR	286	Pharmacy Practice Experience II	4	Pre: PHAR 272, PHAR 285
PHAR	360	Pharmaceutical Analysis	2	Pre: PHAR 280
PHAR	361	Pharmaceutical Dosage Forms II	3	Pre: PHAR 281
PHAR	362	Pharmaceutical Microbiology II	3	Pre: PHAR 283
PHAR	363	Medicinal Chemistry I	3	Pre: PHAR 273, PHAR 280
PHAR	364	Laboratory Data	2	Pre: PHAR 284
PHAR	365	Fundamentals of Pharmacology	3	Pre: PHAR 284
PHAR	366	Pharmacy Practice III	2	Co-req: PHAR 365
PHAR	370	Drug Delivery Systems	3	Pre: PHAR 361
PHAR	371	Medicinal Microbiology	2	Pre: PHAR 362
PHAR	372	Medicinal Chemistry II	3	Pre: PHAR 363
PHAR	373	Pharmacology I	1	Pre: PHAR 365
PHAR	374	Pharmacotherapeutics I	2	Co-req: PHAR 373
PHAR	375	Pharmacy Practice IV	2	Pre: PHAR 366 Co-req: PHAR 374
PHAR	376	Integrated Case-Based Learning I (ICBL I)	2	Pre: PHAR 255, PHAR 364 Co-req: PHAR 374
PHAR	380	Pharmacy Practice Experience III	4	Pre: PHAR 375, PHAR 376
PHAR	460	Biopharmaceutics & Pharmacokinetics	3	Pre: PHAR 370
PHAR	461	Recent Approaches in Phytotherapy	2	Pre: PHAR 272

Faculty Mandatory Courses

PHAR	462	Medicinal Chemistry III	3	Pre: PHAR 363
PHAR	463	Pharmacology II	1	Pre: PHAR 365
PHAR	464	Pharmacotherapeutics II	2	Co-req: PHAR 463
PHAR	465	Pharmacy Practice V	2	Pre: PHAR 285
PHAR	466	Integrated Case-Based Learning II (ICBL II)	2	Pre: PHAR 375, PHAR 376 Co-req: PHAR 464
PHAR	470	Pharmaceutical Manufacturing	3	Pre: PHAR 361
PHAR	471	Phytochemistry	3	Pre: PHAR 273, PHAR 360, PHAR 461
PHAR	472	Pharmacology III	1	Pre: PHAR 365
PHAR	473	Pharmacotherapeutics III	2	Pre: PHAR 371 Co-req: PHAR 472
PHAR	474	Pharmacotherapeutics IV	2	Co-req: PHAR 472
PHAR	475	Pharmacy Practice VI	2	Pre: PHAR 285, PHAR 376
PHAR	476	Integrated Case-Based Learning III (ICBL III)	2	Pre: PHAR 375, PHAR 376 Co-req: PHAR 473, PHAR 474
PHAR	480	Pharmacy Practice Experience IV	4	Pre: PHAR 461, PHAR 465, PHAR 476
PHAR	547	Pharmacology IV	1	Pre: PHAR 365
PHAR	548	Pharmacotherapeutics V	2	Co-req: PHAR 547
PHAR	549	Public Health	1	Pre: PHAR 275, PHAR 371
PHAR	577	Pharmacy Practice Experience V	6	Pre: PHAR 460, PHAR 480
PHAR	578	Pharmacy Practice Experience VI	6	Pre: PHAR 460, PHAR 480
PHAR	579	Inter-Professional Education	2	Pre: PHAR 476
PHAR	583	Toxicology	2	Pre: PHAR 463
PHAR	584	Pharmacology V	1	Pre: PHAR 365
PHAR	585	Pharmacotherapeutics VI	2	Co-req: PHAR 584
PHAR	586	Pharmaceutical Legislations	1	Pre: PHAR 275, PHAR 285



## Description of Faculty Mandatory Courses

### **PHAR 250 PHARMACEUTICAL PHYSICAL CHEMISTRY (2Cr.: 2Lec)**

The aim of the course is to provide students with a systematic understanding of the principles of pharmaceutical physical chemistry, through discussing different states of matter, various types of pharmaceutical solutions of non-electrolytes, strong electrolytes & their colligative properties. The course also studies thermodynamics, dynamic equilibria & catalysis, topics that provide students with basic knowledge necessary for chemistry, pharmacokinetics & pharmaceuticals study.

### **PHAR 251 NATURAL MEDICINE & NUTRITIONAL SUPPLEMENTS (3Cr.: 2Lec, 2Lab)**

The course introduces students to the history of natural medicine, importance of medicinal plants in the body's health care system, characteristics & detection of primary & bioactive metabolites & medicinal values of some common medicinal plants. An emphasis on nutritional supplements & public concern is also considered.

### **PHAR 252 PHARMACEUTICAL ORGANIC CHEMISTRY I (3Cr.: 2Lec, 2Lab)**

The course is designed to include introductory concepts followed by studying fundamentals of stereochemistry & related effects on drug receptor interactions. Physical & chemical characters of alkanes, unsaturated compounds, alkyl halides, alcohols, ethers & their applications in pharmaceutical industry are discussed. Basic knowledge about the phenomena of aromaticity is argued.

### **PHAR 253 HUMAN BIOLOGY (2Cr.: 2Lec)**

The course considers definitions in science, scientific methods, the characteristics of life, metabolism & energy, macromolecules, prokaryotic & eukaryotic cells, cell membrane & organelles, cell division, unity & diversity of living forms, genetic basis of inheritance, Mendelian genetics, exceptions & deviations, as well as male & female reproductive systems.

### **PHAR 254 ANATOMY & HISTOLOGY (3Cr.: 2Lec, 2Lab)**

The aim of the course is to deliver anatomical & histological backgrounds covering the skeleton & joints, cardiovascular, respiratory, digestive, urogenital, CNS & endocrine systems. The course provides details about living cell, epithelium, connective tissue, blood, cartilage, muscular tissue, nervous tissue, lymphatic system & the digestive tract.

### **PHAR 255 COMMUNICATION SKILLS IN PHARMACY PRACTICE (2 Cr.: 1Lec, 2Lab.)**

The course is designed to develop & enhance students' communication skills (listening, questioning & presentation) that are essential for the implementation of pharmaceutical care. The course aims at providing students with tools & techniques for effective interpersonal communication. It also aims at introducing students to basic components of communication (verbal, nonverbal & paraverbal). Through interactive case studies & exercises, students will have the opportunity to learn about various communication styles & communication barriers.

**PHAR 260 PHARMACEUTICAL ANALYTICAL CHEMISTRY I (3Cr.: 2Lec, 2Lab)**

The course describes nature of material, atomic structure, bonding, chemical equilibria, stoichiometry, & the relationships between the structure of molecules, their chemical properties & behaviour. Interferences of heavy metals impurities in the active pharmaceutical ingredients & how to detect such metal impurities according to compendial methods are also explored. Pre-req.: PHAR 250

**PHAR 261 NATURAL THERAPIES I (3Cr.: 2Lec, 2Lab)**

The course elaborates bioactivity of some official medicinal plants belonging to different medicinal organs, diagnostic characters for full identification, detection of adulteration, ensuring patient safety & quality of the product. Special focus is particularized on patient counseling in single herbal medications, besides possible interactions between nutritional supplements & herbal products highlighting the role of pharmacist in this concern. Pre-req: PHAR 251

**PHAR 262 PHARMACEUTICAL ORGANIC CHEMISTRY II (3Cr: 2Lec, 2Lab)**

The course discusses basic knowledge of different organic functional groups including aldehydes, ketones, carboxylic acids & their derivatives. An attention is given to nitrogenous compounds, phenols, alicyclic compounds & their applications in basic synthetic methods used in pharmaceutical industry. Pre-req: PHAR 252

**PHAR 263 PHYSIOLOGY I (2Cr.: 2Lec)**

The course discusses the physiology of blood, autonomic nervous system, excitable system, & endocrine system. Pre-req: PHAR 254

**PHAR 264 ORIENTATION TO PHARMACY PRACTICE (2Cr.: 2Lec)**

The course introduces students to various dimensions of pharmacy profession. Emphasis is placed on drug discovery & development process, history of pharmacy profession & the evolution of pharmaceutical care philosophy. Students will also be exposed to common medical & pharmaceutical terminology, routes of drug administration & drug dosage forms.

**PHAR 265 PHARMACY PRACTICE MANAGEMENT (1Cr.: 1Lec)**

The aim of the course is to provide students with an understanding of the fundamentals of managing businesses & value-added services that meet patient needs in an era where pharmacy practice has evolved from a product to a patient-centered care. The modules contain theories with integration of practical examples, & include varieties of managerial, transformational, behavioral & personal development techniques & practices embedded throughout the course.

**PHAR 266 PHARMACY PRACTICE EXPERIENCE I (4Cr.: 180 Contact Hours):**

This experiential course is conducted in a community practice settings as well as other practice settings. Through active participation in day-to-day services, students will have the opportunity to apply knowledge & skills previously introduced in courses relevant to the experience. Pre-req: PHAR 264, PHAR 265

**PHAR 270 PHARMACEUTICAL ANALYTICAL CHEMISTRY II: (3Cr.: 2Lec, 2Lab)**

The course includes principles of basic & pharmaceutical analytical chemistry such as fundamentals of acid-base, complexation, precipitometric titrations, gravimetric analysis, as well as, application of these principles in the pharmaceutical analysis & quality control of drug substances using compendial methods. Pre-req: PHAR 260

**PHAR 271 PHARMACEUTICAL DOSAGE FORMS I (2Cr: 1Lec, 2Lab)**

The course provides students with necessary tools to carry out pharmaceutical calculations in a wide range of settings. It allows students to gain competence in supporting pharmaceutical services in community, hospital pharmacy & industry. The course also aims at offering students the basic skills for formulating & compounding liquid dosage forms & related guidelines for patient counseling. Moreover, the course enables students to manipulate different factors affecting polyphasic pharmaceutical systems & methods of their stabilization. Pre-req: PHAR 264

**PHAR 272 NATURAL THERAPIES II (3Cr: 2Lec, 2Lab)**

The course deliberates sedatives, anti-inflammatory, antioxidants & other drugs derived from different medicinal plants organs. Diagnostic macro- & microscopic characteristics, active constituents, medicinal uses, qualitative chemical tests, detection of adulteration & patient safety are well detailed. The course discusses the medicinal uses of unorganized drugs, herbal remedies, surgical dressings & sutures, thus enabling students to perform proper patient counseling. It depicts the misuse of herbs, interactions, contraindications & role of pharmacist in pharmaceutical care. Pre-req: PHAR 261

**PHAR 273 PHARMACEUTICAL ORGANIC CHEMISTRY III (3Cr: 2Lec, 2Lab)**

The course delivers knowledge of natural molecules such as carbohydrates, amino acids, peptides & proteins. Specialized evidences concerning polynuclear hydrocarbons, heterocyclic chemistry & their applicability in the field of medicinal drugs synthesis are deeply argued, in addition to adequate familiarity to different spectroscopic techniques. Pre-req: PHAR 262

**PHAR 274 PHYSIOLOGY II (2Cr.: 2Lec)**

The course aims at familiarizing students with the physiology of important body systems such as cardiovascular, gastrointestinal, respiratory, renal & central nervous systems. Pre-req: PHAR 263

**PHAR 275 PHARMACY PRACTICE I (2Cr: 1Lec, 2 Lab)**

The course introduces students to various professional & ethical standards of pharmacy practice. The course is highlighting the structure, processes & financing of the healthcare system. Students will gain insight on the pharmacist's role within the healthcare framework. Through interactive sessions & case scenarios, students will be able to develop their critical thinking & decision-making skills. Pre-req: PHAR 264

**PHAR 280 PHARMACEUTICAL ANALYTICAL CHEMISTRY III (2Cr.: 1Lec, 2Lab)**

The course establishes fundamentals of oxidation-reduction reactions & electrochemical techniques appropriate for the modern chemical analysis laboratory; explaining the application of these principles in the pharmaceutical analysis of drug substances in pharmacopeia. Pre-req: PHAR 270

**PHAR 281 PHYSICAL PHARMACY & PRODUCT STABILITY (3Cr.: 2Lec, 2Lab)**

The course aims at providing students with a strong background & applications of physicochemical characteristics of drugs in relation to formulation & biological performance. The course discusses the significance of utilization of surfactants, co-solvents, complexation, suspending & emulsifying agents for proper design & formulation of drug delivery systems. The course introduces students to the concepts of product stability & stability testing of pharmaceutical products, besides the basic principles of chemical kinetics & regulation of product stability. Pre-req: PHAR 271

**PHAR 282 MODERN SEPARATION & ISOLATION TECHNIQUES (2Cr.: 1Lec, 2Lab):**

The course addresses full insights of the main chromatographic types & the latest techniques of separation of chemical constituents from their natural sources. The course enables students to practice quality control of herbs. It provides sufficient knowledge about herbal preparations & phytopharmaceuticals, explains the production of active constituents from medicinal plants, & details spectroscopic identification of some classes of bioactive natural products. Pre-req: PHAR 272

**PHAR 283 PHARMACEUTICAL MICROBIOLOGY I (3Cr.: 2Lec, 2Lab)**

The course focusses on explaining the structure of different microorganisms in relation to their environmental & nutritional requirements. The course aims at rendering the students familiar with different laboratory techniques for isolation & identification of pathogens. Emphasis will be placed on learning how to master various sterilization techniques & solving the problems encountered with contamination of pharmaceutical products. Pre-req: PHAR 253

**PHAR 284 BIOCHEMISTRY (3Cr.: 2Lec, 2Lab):**

The course introduces the aspects of mammalian biochemistry & metabolism. It enables students to understand the pathophysiologic basis of several diseases & the mode of action of many drugs. It also provides the scientific basis of biochemical processes at the molecular level & orient them towards the application of knowledge acquired in solving clinical problems. The course will discuss the biochemical processes pertinent to carbohydrates, lipids, proteins & nucleotides, as well as any related abnormalities. The laboratory part enables students to understand fundamental laboratory data & apply their knowledge in daily practice. Case studies are also included to prepare students to understand the role of these data in defining therapeutic goals & outcomes. Pre-req: PHAR 273, PHAR 274

**PHAR 285 PHARMACY PRACTICE II (2Cr.: 2Lec):**

The course focusses on processes, operations & regulatory aspects dealing with drug distribution. The goal of this course is to provide insight into how pharmacists can ensure safe, legal & accurate handling of drugs. Students are expected to use critical thinking skills to recognize & resolve potential & actual problems within the drug distribution system. Pre-req: PHAR 264

**PHAR 286 PHARMACY PRACTICE EXPERIENCE II (4Cr.: 180 Contact Hours)**

This experiential course is conducted in a community practice settings as well as other practice settings. Through active participation in day-to-day services, students will have the opportunity to apply knowledge & skills previously introduced in courses relevant to the experience.

Pre-req: PHAR 272, PHAR 285

**PHAR 360 PHARMACEUTICAL ANALYSIS (2Cr.: 1Lec, 2Lab)**

The course handles the theoretical aspects of ultraviolet-visible spectrophotometry, molecular fluorescence, atomic spectrometry, chromatography (high-performance liquid chromatography "HPLC", & gas chromatography "GC") & application in pharmaceutical analysis of drug substances, which helps in ensuring the quality, safety & integrity of pharmaceutical products. Pre-req: PHAR 280

**PHAR 361 PHARMACEUTICAL DOSAGE FORMS II (3Cr.: 2Lec, 2Lab)**

The course is tailored to deliver principles of formulation & aspects of quality control of tablets, capsules, suppositories, sterile & semisolid preparations. The course is integrated with skills utilized in pharmaceutical laboratories, relevant to drug compounding, labeling & patients counseling for the appropriate use & storage of the compounded prescription. Pre-req: PHAR 281

**PHAR 362 PHARMACEUTICAL MICROBIOLOGY II (3Cr.: 2Lec, 2Lab)**

The course addresses the complex nature & functioning of human immune system, immunization programs in addition to different types of hypersensitivity reactions. It also explores the mechanism of action & spectrum of activity for different antimicrobial drugs & the mechanisms by which bacteria develop antimicrobial resistance. The course emphasises on the use of biotechnology in obtaining different pharmaceuticals of medical importance. Pre-req: PHAR 283

**PHAR 363 MEDICINAL CHEMISTRY I (3Cr.: 2Lec, 2Lab)**

The course intends to elaborate fundamentals of medicinal chemistry; it starts with an introduction to physiochemical properties of drugs relative to their biological effects. The course is developed to highlight the concept of drug discovery & development throughout studying chemical & biochemical aspects of certain drug categories including those affecting neurotransmission, local anesthetics, respiratory & gastrointestinal drugs. Satisfactory awareness of the chemistry of antibiotics, antibacterial sulfonamides, quinolones, & antimycobacterial agents is also undertaken. The course helps students to acquire adequate comprehension of potential drug instabilities, interactions & side effects, supporting them meeting patient's needs. The practical part of the course develops students' ethical & professional responsibilities & raises their decision-making skills. Pre-req: PHAR 273, PHAR 280

**PHAR 364 LABORATORY DATA (2Cr.: 2Lec)**

The course introduces students to the fundamentals of interpreting laboratory test results, & the essential information used to screen for or diagnose diseases & monitor the effectiveness & safety of therapy. Topics include reference ranges & critical values. Tests for kidney, liver & heart function, lipid disorders, infectious diseases, cancers & tumor markers, tests for pharmacogenomics, rheumatic diseases & others. Pre-req: PHAR 284

**PHAR 365 FUNDAMENTALS OF PHARMACOLOGY (3Cr.: 2Lec, 3Lab)**

The course aims to provide students with the knowledge of the basic principles of pharmacology, pharmacodynamics (general & molecular aspects) & pharmacokinetics. It also covers the effects of autonomic drugs on cholinergic & noradrenergic neurotransmission, their clinical uses, side effects & drug interactions. Accordingly, the course is considered as pre-requisite to the subsequent five Pharmacology courses (Pharmacology I-V) dealing with drugs affecting different body systems/organs. The practical part of the course aims to help students apply this acquired knowledge using selected in-vitro animal models as well as simulation techniques. Pre-req: PHAR 284

**PHAR 366 PHARMACY PRACTICE III (2Cr.: 2Lec)**

The course is designed to guide student searching for drug information in textbooks & compendial recourses widely used in pharmacy practice. In addition, students will be trained to recognize credible & reliable knowledge resources particularly internet-based information. Emphasis will be put on the different ways of communicating drug-related information to different audiences such as patients & healthcare professionals. Co-req.: PHAR 365

**PHAR 370 DRUG DELIVERY SYSTEMS (3Cr.: 2Lec, 2Lab)**

The course is built to include adequate study of pre-formulation, in vitro drug interaction ensuring safety & accuracy of products & different release mechanisms to monitor drug release patterns. The course aims at rendering students familiar with principles underlying preparation & administration of modified drug delivery systems, transdermal patches & their use in patient care. The course also emphasizes on the role of pharmacist in counseling patients to identify proper way of using compounded products. Pre-req: PHAR 361

**PHAR 371 MEDICAL MICROBIOLOGY (2Cr.: 2Lec, 1Lab):**

The course explores the etiology, pathogenesis, relevant clinical manifestations, diagnostic procedures & treatment guidelines for different infections (bacterial, viral, fungal & parasitic ones). Students will be expected to use their knowledge to contribute to the development of therapeutic strategies against devastating human diseases. Pre-req: PHAR 362

**PHAR 372 MEDICINAL CHEMISTRY II (3Cr.: 2Lec, 2Lab):**

The course is designed to deliver students sufficient understanding of physicochemical, pharmacokinetic & pharmacodynamic properties related to drug structure, aiming at improving future collaboration abilities with other health care providers. The course illustrates the impact of chemical structure on biological aspects, of certain drug classes including those used to treat pain, inflammation & arthritis, opioid analgesics & antagonists, drugs affecting immune system (antihistamines & H<sub>2</sub>-receptor antagonists), calcium homeostasis, steroids & related drugs, in addition to drugs used to treat neuromuscular disorders. Anti-parasites, antifungal & anti-infective agents are likewise included. The practical part of the course promotes students professionalism through taking responsibility for their proper decisions Pre-req: PHAR 363

**PHAR 373 PHARMACOLOGY I (1Cr.: 1Lec)**

The course aims to provide students with the knowledge & understanding of the mode of action, pharmacokinetics, adverse effects, drug interactions & clinical uses of drugs used in the therapy of: glaucoma, allergic rhinitis, inflammation (including NSAIDs, antirheumatoid drugs & drugs used in gout), respiratory disorders, & drugs affecting gastrointestinal function. Being co-requisite to Pharmacotherapeutics I, PHAR 374, the course contents are horizontally integrated & chronologically delivered with clinical disorders discussed under Pharmacotherapy in order to provide optimum learning outcomes. Pre-req: PHAR 365

**PHAR 374 PHARMACOTHERAPEUTICS I (2Cr.: 2Lec):**

The course is designed to introduce students to the essential therapeutic knowledge, principles & concepts needed for providing pharmaceutical care to patients with the following disorders: glaucoma, allergic rhinitis, bone & joint disorders (including rheumatoid arthritis, osteoarthritis & gout), respiratory disorders (including COPD & asthma), & gastrointestinal disorders (including gastro-esophageal reflux disease, peptic ulcer disease, inflammatory bowel disease, irritable bowel syndrome, & liver cirrhosis). Emphasis will be placed on integrating epidemiology, etiology, pathophysiology, treatment options & guidelines, disease state management including the rationale of drug therapy selection, as well as addressing drug therapy related problems for the above mentioned disorders. To apply the acquired knowledge & skills, the course is co-requisite to Integrated Case-Based Learning I, PHAR 376, which enables the provision of patient-centered care. Co-req.: PHAR 373

**PHAR 375 PHARMACY PRACTICE IV (2Cr.: 1Lec, 2Lab)**

The course provides students with knowledge & skills required to understand, criticize & integrate the results of pharmaceutical & biomedical literature into practice, in order to ensure safe & effective pharmaceutical care & to promote health. Special emphases will be put on principles & methods of biostatistics.

Pre-req: PHAR 366

Co-req.: PHAR 374

**PHAR 376 INTEGRATED CASE-BASED LEARNING I (ICBL I) (2Cr.):**

The course aims at introducing students to the basic knowledge of pharmaceutical care principles & practice. It also aims to introduce students to the application of therapeutics in order to enable the provision of patient-centered care.

Pre-req: PHAR 255, PHAR 364

Co-req.: PHAR 374

**PHAR 380 PHARMACY PRACTICE EXPERIENCE III (4Cr.: 180 Contact Hours)**

This experiential course is conducted in a community practice settings as well as other practice settings. Through active participation in day-to-day services, students will have the opportunity to apply knowledge & skills previously introduced in courses relevant to the experience.

Pre-req: PHAR 375, PHAR 376



**PHAR 460 BIOPHARMACEUTICS & PHARMACOKINETICS (3Cr.: 2Lec, 2Lab)**

The course aims at providing students with necessary information related to different factors affecting the performance of various drug dosage forms in vitro & in vivo. The course also delivers specialized knowledge that is essential to understand the concept of bioavailability & bioequivalence. The course allows student to explore the kinetics of the drug in human body, moreover, enables the student to explain the complex issues associated with the processes of drug absorption & disposition in relation to the in vivo performance & determination of drug dose & regimen for therapy individualization.

Pre-req: PHAR 370

**PHAR 461 RECENT APPROACHES IN PHYTOTHERAPY (2Cr.: 1Lec, 2Lab)**

The course reflects the application of concepts & recent trends of pharmaceutical care regarding phytotherapy. Furthermore, it reveals implementation of tools for increased health, well-being & clinical significance of new discovered drugs of natural origin. In addition, the course directs students to formulate appropriate care plans that solve and/or prevent drug-herb interactions in the provided cases scenarios. Pre-req: PHAR 272

**PHAR 462 MEDICINAL CHEMISTRY III (3Cr.: 2Lec, 2Lab)**

The course illuminates the governance of chemical structure on biological attributes of some drug categories including: drugs acting on CNS (depressants & stimulants), insulin, oral hypoglycemic agents, thyroid drugs, diuretics, cardiovascular, & diagnostic agents. The chemotherapeutic characteristics of antineoplastic & antiviral agents, are reasonably discussed in relevance to drug development. Students are expected to postulate molecular modifications of lead drugs enhancing their bioavailability & biological activities, while appreciating the importance of chemistry towards improving patients safety & quality of life. The practical part of the course refines students ethical & professional competences. Pre-req: PHAR 363

**PHAR 463 PHARMACOLOGY II (1Cr.: 1Lec)**

The course aims to provide students with the basic knowledge & understanding of the mode of action, pharmacokinetics, side effects, drug interactions & uses of drugs acting on the cardiovascular & renal systems, including blood drugs. Being co-requisite to Pharmacotherapeutics II course, the course contents are horizontally integrated & chronologically delivered with clinical disorders discussed under Pharmacotherapy in order to provide optimum learning outcomes. Pre-req: PHAR 365

**PHAR 464 PHARMACOTHERAPEUTICS II (2Cr.: 2Lec)**

The course is designed to introduce students to the essential therapeutic knowledge, principles & concepts needed for providing pharmaceutical care to patients with the following disorders: cardiovascular: hypertension, dyslipidemia, ischemic heart disease, heart failure, arrhythmias, thromboembolism, & stroke; hematologic: anemias, hematopoiesis, & coagulation disorders; renal: acute renal failure, chronic kidney disease, electrolyte & acid-base disorders; urologic: erectile dysfunction, management of benign prostatic hyperplasia, & urinary incontinence. Emphasis will be placed on integrating epidemiology, etiology, pathophysiology, treatment options & guidelines, disease state management including the rationale of drug therapy selection, as well as addressing drug therapy related problems for the above mentioned disorders. To apply the acquired knowledge & skills, the course is co-requisite to Integrated Case-Based Learning II course, which enables the provision of patient-centered care. Co-req.: PHAR 463

**PHAR 465 PHARMACY PRACTICE V (2 Cr.: 1Lec, 2Lab.)**

The course focusses on procedures & processes of pharmacy practice in specialized & institutional settings. It highlights potential causes of errors & lapses in patient care during regular operations & care transitions. Students will be expected to use their critical thinking skills to identify probable causes of errors, & design procedures to improve medication use safety. Pre-req: PHAR 285

**PHAR 466 INTEGRATED CASE-BASED LEARNING II (ICBL II) (2 Cr.)**

ICBL II is an interactive course that uses case scenarios set in realistic contexts as the starting place to integrate knowledge from several previous courses with newly acquired therapeutic knowledge. The course aims to develop & refine the students' ability to identify, solve & prevent drug therapy problems while providing pharmaceutical care. The course also develops various students' clinical skills such as communication, patient assessment, & problem solving.

Pre-req: PHAR 375, PHAR 376

Co-requisite: PHAR 464

**PHAR 470 PHARMACEUTICAL MANUFACTURING (3Cr.: 2Lec, 2Lab):**

The course begins with an introduction to basic principles that are involved in the manufacturing of different pharmaceutical dosage forms. It also focusses on the design & operation of equipment used for each unit operation in the industrial pharmacy as mixing, drying, size reduction, emulsification & centrifugation; & how such principles are utilized to design & specify equipment used in manufacturing solid, semisolid, sterile preparations & aerosols. Moreover, selection of proper packaging materials to ensure the stability of the manufacturing products will be considered.

Pre-req: PHAR 361

**PHAR 471 PHYTOCHEMISTRY (3Cr.: 2Lec, 2Lab)**

The course is designed to discuss classes of bioactive constituents from natural sources (glycosides, essential oils, alkaloids, & miscellaneous natural products). The course explains extraction, preparation, molecular structure, stability in extracts & interactions with other ingredients in pharmaceutical preparations, physical & chemical characteristics, pharmacological effects, SAR, & methods of quantification. The course depicts ensuring quality & safety of the products in extracts & in different dosage forms. The course specially emphasizes on the role of pharmacist in counseling OTC & prescribed drugs of natural origin belonging to the studied bioactive classes. Pre-req: PHAR 273, PHAR 360, PHAR 461

**PHAR 472 PHARMACOLOGY III (1Cr.: 1Lec)**

The course aims to provide students with the basic knowledge & understanding of the mode of action, pharmacokinetics, side effects, drug interactions & uses of antimicrobial drugs, in addition to drugs affecting the endocrine system. Being co-requisite to Pharmacotherapeutics III course & Pharmacotherapeutics IV course, the course contents are horizontally integrated & chronologically delivered with clinical disorders discussed under Pharmacotherapy in order to provide optimum learning outcomes. Pre-req: PHAR 365

**PHAR 473 PHARMACOTHERAPEUTICS III (2Cr.: 2Lec):**

The course is designed to introduce students to the essential therapeutic knowledge, principles & concepts needed for providing pharmaceutical care to patients with the following infectious diseases: central nervous system infections, upper respiratory tract infections, lower respiratory tract infections, skin & soft-tissue infections, tuberculosis, endocarditis, intra-abdominal infections, urinary tract infections, prostatitis, sexually transmitted diseases, sepsis & septic shock, surgical prophylaxis, superficial fungal infections, invasive fungal infections, viral infections, HIV infection, & parasitic diseases. Emphasis will be placed on integrating epidemiology, etiology, pathophysiology, treatment options & guidelines, disease state management including the rationale of drug therapy selection, as well as addressing drug therapy related problems for the above mentioned disorders. To apply the acquired knowledge & skills, the course is co-requisite to Integrated Case-Based Learning III, PHAR 476, which enables the provision of patient-centered care.

Pre-req: PHAR 371

Co-req.: PHAR 472

**PHAR 474 PHARMACOTHERAPEUTICS IV (2Cr.: 2Lec)**

The course is designed to introduce students to the essential therapeutic knowledge, principles & concepts needed for providing pharmaceutical care to patients with the following disorders: endocrinologic: Diabetes Mellitus, thyroid disorders, & adrenal gland disorders; gynecologic & obstetric: pregnancy & lactation, contraception, & menstruation-related disorders. Emphasis will be placed on integrating epidemiology, etiology, pathophysiology, treatment options & guidelines, disease state management including the rationale of drug therapy selection, as well as addressing drug therapy related problems for the above mentioned disorders. To apply the acquired knowledge & skills, the course is co-requisite to Integrated Case-Based Learning III, PHAR 476, which enables the provision of patient-centered care. Co-req.: PHAR 472

**PHAR 475 PHARMACY PRACTICE VI (2 Cr.: 1Lec, 2Lab.):**

The course further explores various aspects & dimensions of professional practice. The course covers drug distribution processes, patient self-care therapeutics (OTC) & patient counseling. Through a combination of lectures, laboratory simulations, patient case scenarios & individual work, students will be able to develop their knowledge, skills & attitudes required to practice in different settings.

Pre-req: PHAR 285, PHAR 376

**PHAR 476–INTEGRATED CASE-BASED LEARNING III (ICBL III) (2Cr.):**

ICBL III is an interactive course that uses case scenarios set in realistic contexts as the starting place to integrate knowledge from several previous courses with newly acquired therapeutic knowledge. The course aims to develop & refine the students' ability to identify, solve & prevent drug therapy problems while providing pharmaceutical care. The course also develops various students' clinical skills such as communication, patient assessment, & problem solving.

Pre-req: PHAR 375, PHAR 376

Co-req.: PHAR 473, PHAR 474

**PHAR 480 PHARMACY PRACTICE EXPERIENCE IV (4Cr.: 180 Contact Hours)**

This experiential course is conducted in a community practice settings as well as other practice settings. Through active participation in day-to-day services, students will have the opportunity to apply knowledge & skills previously introduced in courses relevant to the experience.

Pre-req: PHAR 461, PHAR 465, PHAR 476

**PHAR 547 PHARMACOLOGY IV (1Cr.: 1Lec)**

The course aims to provide students with the basic knowledge & understanding of the mode of action, pharmacokinetics, side effects, drug interactions & uses of drugs acting on the CNS, including antidepressants, antipsychotics, anticonvulsant drugs, anxiolytics & hypnotics, antiepileptics, drugs for Parkinsonism, CNS stimulants, general & local anesthetics. Being co-requisite to Pharmacotherapeutics V course, the course contents are horizontally integrated & chronologically delivered with clinical disorders discussed under Pharmacotherapy in order to provide optimum learning outcomes.

Pre-req: PHAR 365

**PHAR 548 PHARMACOTHERAPEUTICS V (2Cr.: 2Lec)**

The course is designed to introduce students to the essential therapeutic knowledge, principles & concepts needed for providing pharmaceutical care to patients with the following disorders: neurologic: epilepsy & status epilepticus, Parkinson's disease, pain management & headache; psychiatric: childhood disorders, eating disorders, Alzheimer's, schizophrenia, depressive disorders, anxiety, sleep disorders, & substance-related disorders. Emphasis will be placed on integrating epidemiology, etiology, pathophysiology, treatment options & guidelines, disease state management including the rationale of drug therapy selection, as well as addressing drug therapy related problems for the above mentioned disorders. Co-req.: PHAR 547

**PHAR 549 PUBLIC HEALTH (1Cr: 1Lec)**

This course is offered to provide students with comprehensive information & principles related to public health particularly as it relates to pharmacy practice, in the context of the Lebanese health care system. Fundamentals of public health, concepts, tools of health policy & models of pharmacist-run public health programs are all presented in this course. Pre-req: PHAR 275, PHAR 371

**PHAR 577 PHARMACY PRACTICE EXPERIENCE V (6Cr.: 270 Contact Hours)**

This course is conducted in an in-patient care settings & other practice settings. Through active participation in day-to-day services, students will have the opportunity to apply knowledge & skills previously introduced in courses relevant to the experience. Pre-req: PHAR 460, PHAR 480

**PHAR 578 PHARMACY PRACTICE EXPERIENCE VI (6Cr.: 270 Contact Hours)**

This experiential course is conducted in a community practice settings as well as other practice settings. Through active participation in day-to-day services, students will have the opportunity to apply knowledge & skills previously introduced in courses relevant to the experience. Pre-req: PHAR 460, PHAR 480

**PHAR 579 INTER-PROFESSIONAL EDUCATION (2Cr.)**

The course aims to foster the skills, knowledge, attitudes & behaviors that facilitate effective inter-professional (IP) collaborative practice among health care providers. Through interactive learning, students will explore ways in which their professions can work together in order to optimize patient's care while respecting each other's roles & responsibilities. Pre-req: PHAR 476

**PHAR 583 TOXICOLOGY (2Cr.: 2Lec)**

The course aims to provide students with the basic knowledge & understanding of the principles of general toxicology, clinical toxicology, toxicity of common drugs, household products, substances of abuse, common environmental & food toxicants. In addition, the course discusses the mechanisms of action of antidotes with examples of available ones & their clinical uses. The course promotes problem-solving skills of students. Pre-req: PHAR 463

**PHAR 584 PHARMACOLOGY V (1Cr.: 1Lec)**

The course aims to provide students with the basic knowledge & understanding of the mode of action, pharmacokinetics, side effects, drug interactions & uses of anticancer drugs & immunosuppressants. Being co-requisite to Pharmacotherapeutics VI course, the course contents are horizontally integrated & chronologically delivered with clinical disorders discussed under Pharmacotherapy in order to provide optimum learning outcomes. Pre-req: PHAR 365

**PHAR 585 PHARMACOTHERAPEUTICS VI (2Cr.: 2Lec)**

The course is designed to introduce students to the essential therapeutic knowledge, principles & concepts needed for providing pharmaceutical care to patients with the following disorders: Oncologic: cancer treatment & chemotherapy, breast cancer, lung cancer, colorectal cancer, prostate cancer, ovarian cancer, lymphomas, leukemia, & myeloma; immunologic: Systemic Lupus Erythematosus, allergic drug reactions, organ transplantation; dermatologic: psoriasis, drug-induced skin reactions, & dermatitis. Emphasis will be placed on integrating epidemiology, etiology, pathophysiology, treatment options & guidelines, disease state management including the rationale of drug therapy selection, as well as addressing drug therapy related problems for the above-mentioned disorders.

Co-req.: PHAR 584

**PHAR 586 PHARMACEUTICAL LEGISLATIONS (1Cr.: 1Lec.)**

The course aims at acquainting students with Lebanese laws & legislations that control the pharmacy profession in the framework of good pharmacy practice.

Pre-req: PHAR 275, PHAR 285

## Faculty Elective Courses

### 1.CATEGORY A

Students have to choose **FOUR** from the following courses:

Course		Title	Credits	Prerequisite
PHAR	564	Supportive Care For Patients With Chronic Kidney Disease	1	Pre: PHAR 435
PHAR	565	Pharmacovigilance	1	
PHAR	587	Anticoagulation Therapy Management	1	Pre: PHAR 464
PHAR	588	Pain Management	1	Pre: PHAR 548
PHAR	589	Oncology Supportive Care	1	Pre: PHAR 462
PHAR	590	Clinical Nutrition	1	Pre: PHAR 461
PHAR	591	Selected Autoimmune Disorders	1	Pre: PHAR 362 Co-req: PHAR 584
PHAR	592	Clinical Pharmacokinetics	1	Pre: PHAR 460

### 2.CATEGORY B

Students have to choose **TWO** from the following courses:

Course		Title	Credits	Prerequisite
PHAR	566	Pharmaceutical Regulatory Affairs	1	
PHAR	593	Hospital Pharmacy	1	Pre: PHAR 465
PHAR	594	Principles of Pharmacoeconomics	1	Pre: PHAR 275, PHAR 465
PHAR	595	Pharmaceutical Layout	1	Pre: PHAR 470
PHAR	596	Cosme-Pharmaceuticals	1	Pre: PHAR 361
PHAR	597	Natural Dietary Supplements & Health Products	1	Pre: PHAR 272
PHAR	598	Pharmaceutical Marketing	1	Pre: PHAR 577, PHAR 578
PHAR	599	Advanced Communication Skills & Care for Special Population	1	Pre: PHAR 464, PHAR 474

## Description of Faculty Elective Courses

### 1. CATEGORY A

Students have to choose **FOUR** from the following courses:

**PHAR 564 SUPPORTIVE CARE FOR PATIENTS WITH CHRONIC KIDNEY DISEASE (1Cr.:1Lec.)**

This course highlights the role of the pharmacist as a member of the circle of care of patients with CKD. It will provide the necessary knowledge & skills to handle hemodialysis complications such as nausea & vomiting, anemias & others.

Pre-requisite: PHAR 435

**PHAR 565 PHARMACOVIGILANCE(1Cr.:1Lec.)**

This course aims to provide an opportunity for the students to learn about basic terminologies used in pharmacovigilance & various methods that can be used to generate safety data. In addition, it develops the skills of classifying drugs, diseases & adverse drug reactions.

**PHAR 587 ANTICOAGULATION THERAPY MANAGEMENT (1Cr.)**

The course aims at providing students with necessary knowledge & skills to offer care & management of patients with conditions requiring the use of anticoagulant & antiplatelet therapy to ensure better outcomes. Pre-req: PHAR 464

**PHAR 588 PAIN MANAGEMENT (1Cr.)**

In this course, emphasis will be put on various approaches for controlling pain in patients with acute & chronic conditions such as postoperative pain, neuropathies & cancer. Pre-req: PHAR 548

**PHAR 589 ONCOLOGY SUPPORTIVE CARE (1Cr.):**

This course highlights the role of the pharmacist as a member of the circle of care of cancer patients. It will provide the necessary knowledge & skills to handle chemotherapy complications such as nausea & vomiting, febrile neutropenia, anemias & toxicities specific to particular chemotherapeutic agents. Pre-req: PHAR 462

**PHAR 590 CLINICAL NUTRITION (1Cr.)**

This course describes the nutritional requirements for therapeutic support of special patient populations. Concepts of enteral & parenteral nutrition will be discussed in the context of critically ill patients' care. Pre-req: PHAR 461

**PHAR 591 SELECTED AUTOIMMUNE DISORDERS (1Cr.)**

This course provides the students with in depth knowledge & skills required to provide patient care to patients with selected autoimmune disorders such as: systemic lupus erythematosus, multiple sclerosis, & psoriasis. In addition, the role of pharmacist within the circle of care of post-transplant patients will be covered.

Pre-req: PHAR 362 Co-req: PHAR 584



**PHAR 592 CLINICAL PHARMACOKINETICS (1Cr.)**

The course is designed in order to enable the student to develop & integrate the knowledge & skills required to apply pharmacokinetic-pharmacodynamic principles for the individualization of drug dosing regimens. The student recognizes & manages clinically significant actual & potential pharmacokinetic interactions & perform therapeutic drug management in patients receiving medications for which concentrations can be measured in practice (e.g. chemotherapeutic agents, anticonvulsants, cardiac medications, psychiatric medications, immuno-suppressants) or predicted from population-pharmacokinetic data. Pre-req: PHAR 460

**2.CATEGORY B**

**Students have to choose TWO from the following courses:**

**PHAR 566 PHARMACEUTICAL REGULATORY AFFAIRS (1Cr.:1Lec.)**

This course aims to provide students with an opportunity to understand aspects related to pharmaceutical regulatory affairs including national & international drug laws, guidelines & regulations. Moreover, this course develops skills required for drug registration nationally & internationally.

**PHAR 593 HOSPITAL PHARMACY (1Cr.)**

Principles of different Pharmaceutical technical services implemented in hospitals including, preparation of IV admixtures & TPN, handling of cytotoxic & radioactive products. Identification & correction of irrational prescription & causes of medication errors. The administrative role of pharmacists in hospital (knowledge related to hospital pharmacist activities).

Pre-req: PHAR 465

**PHAR 594 PRINCIPLES OF PHARMACOECONOMICS (1Cr.)**

In this course the students will explore the application of the ECHO in deriving useful conclusions regarding drug selection for particular patient situations in addition to drug formulary development. In addition, the course will highlight the basic concepts of health policy management.

Pre-req: PHAR 275, PHAR 465

**PHAR 595 PHARMACEUTICAL LAYOUT (1Cr.)**

The course aims at providing the students with the main ideas about the essential concepts & aspects related to quality control & quality assurance of pharmaceuticals. The course allows students to recognize GMP regulations for different dosage forms as well as various methods of pharmaceutical process validation & sources of quality variations. The course allows students to gain the basic knowledge of pharmaceutical layout through training in different pharmaceutical plants. It enables the students to identify variables controlling packaging materials selection & stability of the finished products. The course is also focusing on the basic knowledge of drug approval & registration in Lebanon. Pre-req: PHAR 470

**PHAR 596 COSME-PHARMACEUTICALS (1Cr.)**

The course aims at providing the students with strong background of the function & behavior of skin, hair & nails with special emphasis on their response to environmental, physiological & aging factors. Dermatological reactions of skin, hair & nails to cosmetic raw materials & formulations are also addressed. Functions, properties, stability, & possible side effects of active & inactive cosmetic ingredients & formulations, in addition to cosmetic regulations, product safety & manufacturing are illustrated. The manufacture of cosmetic products, with therapeutic focus, as well as their quality control prospective are clarified. Pre-req: PHAR 361

**PHAR 597 NATURAL DIETARY SUPPLEMENTS & HEALTH PRODUCTS (1Cr.):**

Chemistry, classification, distribution, pharmaceutical & clinical use of natural dietary supplements & Health Products, possible interactions with other drugs, self-medication, restrictions before use, national & international regulations, public awareness & role of pharmacists.  
Pre-req: PHAR 272

**PHAR 598 PHARMACEUTICAL MARKETING (1 Cr.)**

Marketing management, analysis of marketing opportunities, developing market strategies, shaping the market offering, managing & delivering marketing programs, Lebanese pharmaceutical market.  
Co-req.: PHAR 577 or PHAR 578

**PHAR 599 ADVANCED COMMUNICATION SKILLS & CARE FOR SPECIAL POPULATION (1Cr.: 1Lec)**

The overall focus of this course is on the theory & practice of communication in the pharmacy setting. With patient empowerment being the ultimate goal, instruction will be directed toward improving communication skills in professional relationships with patients. The course uses different techniques including role playing exercises to improve the student's ability to conduct patient centered consultations. The course also prepares students to collaborate in developing effective interpersonal communication skills with pharmacist colleagues & other health practitioners.  
Pre-req: PHAR 464 or PHAR 474

## Study Plan

### Bachelor Degree "B.Sc. in Pharmacy (180 Credits)

First Semester (17 Credits)			Crs.	Pre-co/requisites
PHAR	250	Pharmaceutical Physical Chemistry	2	Pre: MATH112
PHAR	251	Natural Medicine & Nutritional Supplements	3	
PHAR	252	Pharmaceutical Organic Chemistry I	3	
PHAR	253	Human Biology	2	
PHAR	254	Anatomy & Histology	3	
PHAR	255	Communication Skills in Pharmacy Practice	2	
ENGL	001	English Language (University Mandatory1)	2	
Second Semester (18 Credits)			Crs.	Pre-co/requisites
PHAR	260	Pharmaceutical Analytical Chemistry I	3	Pre: PHAR 250
PHAR	261	Natural Therapies I	3	Pre: PHAR 251
PHAR	262	Pharmaceutical Organic Chemistry II	3	Pre: PHAR 252
PHAR	263	Physiology I	2	Pre: PHAR 254
PHAR	264	Orientation to Pharmacy Practice	2	
PHAR	265	Pharmacy Practice Management	1	
PHAR	001	Arabic Language (University Mandatory1)	2	
PHAR	001	Human Rights (University Mandatory1)	1	
		University electives <sup>1</sup>	1	
PHAR	266	Pharmacy Practice Experience I	4	Pre: PHAR 264, PHAR 265
Third Semester (18 Credits)			Crs.	Pre-co/requisites
PHAR	260	Pharmaceutical Analytical Chemistry II	3	Pre: PHAR 260
PHAR	270	Pharmaceutical Dosage Forms I	2	Pre: PHAR 264
PHAR	271	Natural Therapies II	3	Pre: PHAR 261
PHAR	272	Pharmaceutical Organic Chemistry III	3	Pre: PHAR 262
PHAR	273	Physiology II	2	Pre: PHAR 263
PHAR	274	Pharmacy Practice I	2	Pre: PHAR 264
PHAR	275	University Electives <sup>1</sup>	3	

<b>Fourth Semester (18 Credits)</b>			<b>Crs.</b>	<b>Pre-co/requisites</b>
PHAR	280	Pharmaceutical Analytical Chemistry III	2	Pre: PHAR 270
PHAR	281	Physical Pharmacy & Product Stability	3	Pre: PHAR 271
PHAR	282	Modern Separation & Isolation Techniques	2	Pre: PHAR 272
PHAR	283	Pharmaceutical Microbiology I	3	Pre: PHAR 253
PHAR	284	Biochemistry	3	Pre: PHAR 273, PHAR 274
PHAR	285	Pharmacy Practice II	2	Pre: PHAR 264
		University Electives <sup>1</sup>	3	
PHAR	286	Pharmacy Practice Experience II	4	Pre: PHAR 272, PHAR 285
<b>Fifth Semester (18 Credits)</b>			<b>Crs.</b>	<b>Pre-co/requisites</b>
PHAR	360	Pharmaceutical Analysis	2	Pre: PHAR 280
PHAR	361	Pharmaceutical Dosage Forms II	3	Pre: PHAR 281
PHAR	362	Pharmaceutical Microbiology II	3	Pre: PHAR 283
PHAR	363	Medicinal Chemistry I	3	Pre: PHAR 273, PHAR 280
PHAR	364	Laboratory Data	2	Pre: PHAR 284
PHAR	365	Fundamentals of Pharmacology	3	Pre: PHAR 284
PHAR	366	Pharmacy Practice III	2	Co-req: PHAR 365
<b>Sixth Semester (15 Credits)</b>			<b>Crs.</b>	<b>Pre-co/requisites</b>
PHAR	370	Drug Delivery Systems	3	Pre: PHAR 361
PHAR	371	Medical Microbiology	2	Pre: PHAR 362
PHAR	372	Medicinal Chemistry II	3	Pre: PHAR 363
PHAR	373	Pharmacology I	1	Pre: PHAR 365
PHAR	374	Pharmacotherapeutics I	2	Co-req: PHAR 373
PHAR	375	Pharmacy Practice IV	2	Pre: PHAR 366 Co-req: PHAR 374
PHAR	376	Integrated Case-Based Learning I (ICBLI)	2	Pre: PHAR 255, PHAR 364 Co-req: PHAR 374
PHAR	380	Pharmacy Practice Experience III	4	Pre: PHAR 375, PHAR 376

<b>Seventh Semester (15 Credits)</b>			<b>Crs.</b>	<b>Pre-co/requisites</b>
PHAR	460	Biopharmaceutics & Pharmacokinetics	3	Pre: PHAR 370
PHAR	461	Recent Approaches In Phytotherapy	2	Pre: PHAR 272
PHAR	462	Medicinal Chemistry III	3	Pre: PHAR 363
PHAR	463	Pharmacology II	1	Pre: PHAR 365
PHAR	464	Pharmacotherapeutics II	2	Co-req: PHAR 463
PHAR	465	Pharmacy Practice V	2	Pre: PHAR 285
PHAR	466	Integrated Case-Based Learning (ICBL) II	2	Pre: PHAR 375, PHAR 376 Co-req: PHAR 464
<b>Eighth Semester (15 Credits)</b>			<b>Crs.</b>	<b>Pre-co/requisites</b>
PHAR	470	Pharmaceutical Manufacturing	3	Pre: PHAR 361
PHAR	471	Phytochemistry	3	Pre: PHAR 273, PHAR 360 PHAR 461
PHAR	472	Pharmacology III	1	Pre: PHAR 365
PHAR	473	Pharmacotherapeutics III	2	Pre: PHAR 371 Co-req: PHAR 472
PHAR	474	Pharmacotherapeutics IV	2	Co-req: PHAR 472
PHAR	475	Pharmacy Practice VI	2	Pre: PHAR 285, PHAR 376
PHAR	476	Integrated Case-Based Learning (ICBL) III	2	Pre: PHAR 375, PHAR 376 Co-req: PHAR 473, PHAR 474
PHAR	480	Pharmacy Practice Experience IV	4	Pre: PHAR 461, PHAR 465 PHAR 476

<b>Ninth Semester (15 Credits)</b>			<b>Crs.</b>	<b>Pre-co/requisites</b>
PHAR	547	Pharmacology IV	1	Pre: PHAR 365
PHAR	548	Pharmacotherapeutics V	2	Co-req: PHAR 547
PHAR	549	Public Health	1	Pre: PHAR 275, PHAR 371
PHAR	577	Pharmacy Practice Experience V	6	Pre: PHAR 460, PHAR 480
PHAR	578	Pharmacy Practice Experience VI		
PHAR	579	Inter-Professional Education (IPE)	2	Pre: PHAR 476
Faculty Electives <sup>2</sup>			3	

<b>Tenth Semester (15 Credits)</b>			<b>Crs.</b>	<b>Pre-co/requisites</b>
PHAR	583	Toxicology	2	Pre: PHAR 463, PHAR 547
PHAR	584	Pharmacology V	1	Pre: PHAR 365
PHAR	585	Pharmacotherapeutics VI	2	Co-req: PHAR 584
PHAR	577	Pharmacy Practice Experience V	6	Pre: PHAR 460, PHAR 480
PHAR	578	Pharmacy Practice Experience VI		
PHAR	586	Pharmaceutical Legislations	1	Pre: PHAR 275, PHAR 285
Faculty Electives <sup>2</sup>			3	

<sup>1</sup> A total of 12 credits is required as general University requirements; 5 credits are University mandatory courses which are: Arabic language [ARAB 001 (2Cr.)], General English [ENGL 001 (2Cr.)] & Human Rights [BLAW 001 (1Cr.)] & another 7 credits which are to be selected from the University Elective course list.

<sup>2</sup> To be selected from the Faculty elective courses list offered by the Faculty, which is subject to change according to the number of students enrolled in the elective course.

- International Computer Driving License (ICDL) certificate is a requirement for graduation

- The list of University Requirement courses & their descriptions are presented in the introductory pages of this catalog.